

Application Note — Continuous, On-Line NIR Analysis of Process Gasses

Near infrared spectroscopy (NIR) is not commonly associated with on-line analysis of process gasses as compared to infrared (IR) or gas chromatography (GC). The purpose of this application note is to demonstrate not only the specificity, but also the quantitative capability of our NIR photometers for *continuous* gas analysis. The NIR spectra shown below illustrate the differences among common process gasses. The two figures show both the short and the long wavelength NIR regions. The spectra are from various gasses at ppm concentrations at low pressures taken in a 25 cm fiber optic gas cell. In some cases, such as identification of gasses in incoming railroad tank cars at plant sites, we use various peak ratios and output unique (4, 6, 8 mA) analog signals that represent the identified gas.

In other cases, we provide continuous, quantitative gas analysis. The trend shown below was taken from one of our 20 cm gas cell probes over 3 days in a manufacturing plant. This represents data from a pair of redundant Guided Wave filter photometers measuring ethylene in the low percent range. The photometer system can correct for sample pressure, and transmits results continuously via either digital or analog outputs. In many instances the photometer achieves better than 1% full-scale precision (e.g. 5% propane in propylene).

